

THAT WHICH IS CLAIMED:

1. A store ejection system for mounting a jettisonable store, the store ejection system using a fluid as a source of energy and a transfer mechanism and comprising:
- 5 a fluid source capable of providing a pressurized non-pyrotechnic fluid for providing the source of energy and the transfer mechanism;
- an actuation system comprising an accumulator configured to be selectively fluidly connected to the fluid source for receiving and storing the fluid from the fluid source, a poppet valve for controlling a flow of the fluid from the accumulator, and a
- 10 controller for actuating the poppet valve to an open position in response to a control signal to jettison the store;
- a pneumatically-driven jettison mechanism for releasably retaining the store, the jettison mechanism fluidly connected to the poppet valve such that actuating the poppet valve to an open position releases the pressurized fluid in the accumulator to
- 15 flow to the jettison mechanism, thereby actuating the jettison mechanism to jettison the store;
- an isolation valve configured to control a flow of the fluid from the fluid source to the accumulator; and
- a valve control member configured to operatively couple the isolation valve to
- 20 an adjustable member of at least one of the actuation system and the jettison mechanism such that the isolation valve is closed when the poppet valve is actuated to the open position, the isolation valve thereby preventing the flow of the fluid from the fluid source to the accumulator.
- 25 2. A store ejection system according to Claim 1 further comprising at least one retention member for retaining the store and a drive member for actuating the retention member to release the store, the drive member being operatively coupled to the isolation valve such that the drive member closes the isolation valve when the drive member actuates the retention member to release the store.
- 30 3. A store ejection system according to Claim 2 wherein the valve control member comprises a pinion gear coupled to a rack gear on the drive member, the pinion gear defining a cam in communication with the isolation valve.

4. A store ejection system according to Claim 2 wherein the retention member is configured to be actuated to release the store by a flow of the pressurized fluid exiting the accumulator through the poppet valve.
5. A store ejection system according to Claim 2 wherein the jettison mechanism further comprises at least one ejector piston for forcibly jettisoning the store when the retention member has been actuated to a release position, the ejector piston being actuated to jettison the store by the pressurized fluid exiting the accumulator through the poppet valve.
6. A store ejection system according to Claim 1 wherein the accumulator defines a port in fluid communication with the isolation valve and the poppet valve such that the accumulator is filled by the flow of fluid from the fluid source through the port and the flow of fluid from the accumulator to the jettison mechanism is delivered through the port.
7. A store ejection system according to Claim 1, further comprising an integral body portion housing the isolation valve and the poppet valve.
8. A store ejection system according to Claim 1, further comprising a relief valve configured to vent the fluid from the accumulator to reduce the pressure in the accumulator to below a maximum operating pressure.
9. A suspension and release equipment module for jettisoning a store, the module using a pressurized non-pyrotechnic fluid as a source of energy and a transfer mechanism and comprising:
- an accumulator configured to receive the fluid from a fluid source and store the fluid;
 - a poppet valve for controlling a flow of fluid from the accumulator;
 - a jettison mechanism for releasably retaining the store, the jettison mechanism fluidly connected to the accumulator via the poppet valve;
 - an isolation valve configured to control a flow of the fluid into the accumulator; and

a valve control member configured to operatively couple the isolation valve to at least one of the actuation system and the jettison mechanism such that the isolation valve is configured to be closed when the poppet valve is actuated to the open position, the isolation valve thereby preventing the flow of the fluid to the
5 accumulator.

10. A suspension and release equipment module according to Claim 9, further comprising at least one retention member for retaining the store and a drive member for actuating the retention member to release the store, the drive member being
10 operatively coupled to the isolation valve such that the drive member closes the isolation valve when the drive member actuates the retention member to release the store.

11. A suspension and release equipment module according to Claim 10 wherein
15 the valve control member comprises a pinion gear coupled to a rack gear on the drive member, the pinion gear defining a cam in communication with the isolation valve.

12. A suspension and release equipment module according to Claim 10 wherein the retention member is configured to be actuated to release the store by a flow of the
20 pressurized fluid exiting the accumulator through the poppet valve.

13. A suspension and release equipment module according to Claim 10 wherein the jettison mechanism further comprises at least one ejector piston for forcibly jettisoning the store when the retention member has been actuated to a release
25 position, the ejector piston being actuated to jettison the store by the pressurized fluid exiting the accumulator through the poppet valve.

14. A suspension and release equipment module according to Claim 9 wherein the accumulator defines a port in fluid communication with the isolation valve and the
30 poppet valve such that the accumulator is filled by the flow of fluid through the port and the flow of fluid from the accumulator to the jettison mechanism is delivered through the port.

15. A suspension and release equipment module according to Claim 9, further comprising an integral body portion housing the isolation valve and the poppet valve.
16. A suspension and release equipment module according to Claim 9, further comprising a relief valve configured to vent the fluid from the accumulator to reduce the pressure in the accumulator to below a maximum operating pressure.
17. A suspension and release equipment module according to Claim 9, further comprising a controller for actuating the poppet valve to an open position in response to a control signal to jettison the store, thereby closing the isolation valve.
18. A method of jettisoning a store from an aircraft using a pressurized non-pyrotechnic fluid as a source of energy and a transfer mechanism, the method comprising:
- 15 releasably retaining the store with at least one pneumatically-driven jettison mechanism;
- providing a fluid from a fluid source to an accumulator via an isolation valve;
- actuating a poppet valve fluidly connected to the accumulator to an open position to fluidly connect the accumulator to the jettison mechanism such that the fluid flows from the accumulator to the jettison mechanism and thereby actuates the jettison mechanism to jettison the store; and
- 20 closing an isolation valve via an operative coupling between the isolation valve and at least one of the actuation system and the jettison mechanism such that the isolation valve prevents a flow of the fluid from the fluid source to the accumulator while the poppet valve is in the open position.
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19. A method according to Claim 18 wherein said releasably retaining step comprises retaining the store with at least one retention member, and said actuating and closing steps comprise actuating the retention member to release the store via a drive member operatively coupled to the isolation valve by the valve control member such that the drive member closes the isolation valve when the drive member actuates the retention member to release the store.
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20. A method according to Claim 19 wherein said actuating and closing steps comprise rotating a pinion gear coupled to a rack gear on the drive member and thereby actuating the isolation valve via a cam on the pinion gear.
- 5 21. A method according to Claim 19 wherein said actuating step comprises adjusting the poppet valve with a flow of pressurized fluid exiting the accumulator and thereby actuating the retention member to release the store.
- 10 22. A method according to Claim 19, further comprising actuating an ejector piston by the pressurized fluid exiting the accumulator through the poppet valve and thereby forcibly jettisoning the store when the retention member has been actuated to a release position,
- 15 23. A method according to Claim 18 wherein said providing and actuating steps comprise providing the fluid to the accumulator and releasing the fluid from the accumulator through a port in fluid communication with the isolation valve.
- 20 24. A method according to Claim 18, further comprising venting the fluid from the accumulator through a relief valve to reduce the pressure in the accumulator to below a maximum operating pressure.
- 25 25. A method according to Claim 18 wherein said actuating step comprises actuating the poppet valve to an open position by a controller in response to a control signal to jettison the store.